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Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.	2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8=50$, will be treated as malpractice.

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18MCA15

First Semester MCA Degree Examination, June/July 2019 **Computer Organization**

Attime: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

		Module-1	
1	a.	Convert the decimal number 250.5 to binary, octal and hexadecimal.	(05 Marks)
	b.	Convert the following numbers from the given base to the base indicated	(
		Binary 11010111.110 to decimal, octal and hexadecimal.	(04 Marks)
	0	ii) Octal 623.77 to decimal, binary and hexadecimal.	(04 Marks)
	C.	Obtain 1's and 2's compliment of the binary numbers 1010101, 0111000 and 100	00.
	d.	Perform the subtraction of the following 1:	(03 Marks)
		Perform the subtraction of the following binary numbers using 2's compliment.	ent and 1's
		i) 11010 – 1101 ii) 10010 – 10011	
) 10010 10011	(04 Marks)
		OR	
2	a.	State axiomatic definition of Boolean algebra.	(05 Marks)
	b.	Express the Boolean function $F = A + B'C$ in sum of minterms and product of ma	vterme
			(05 Marks)
	C.	Simplify the following Boolean function using map method.	()
		i) $F(x, y, z) = \sum (0, 2, 4, 5, 6)$	
	4	ii) $F(w, x, y, z) = \sum (0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14).$	(04 Marks)
	d.	Implement the function $F(x, y, z) = \sum (0, 6)$ using i) NAND gates and ii) NOR	gates.
			(06 Marks)
		Malala 2	
3	a	With a neat block diagram, explain half adder and full adder.	
	b.	Explain 4 bit binary parallel adder with look ahead carry generator.	(06 Marks)
	-	With a logic diagram, explain magnitude comparator.	(06 Marks)
	d	What is demultipleyer? Explain briefly	(04 Marks)

-	Trioudic 2	
3	a. With a neat block diagram, explain half adder and full adder.	(06 Marks)
	b. Explain 4 bit binary parallel adder with look ahead carry generator.	(06 Marks)
	c. With a logic diagram, explain magnitude comparator.	(04 Marks)
	d. What is demultiplexer? Explain briefly.	(04 Marks)
		(04 Marks)

4	a.	Implement the function $F(A, B, C, D) = \sum_{i=0}^{\infty} (0, 1, 3, 4, 8, 9, 15)$ with a multiplexer.	(04 Marks)
	b.	With a neat logic diagram, explain clocked RS flip flop.	(06 Marks)
	c.	Explain JK flip flop.	(06 Marks)
	d.	With an example explain Booth algorithm.	,
			(04 Marks)

		<u>wiodule-3</u>	
5	a.	With a neat block diagram, explain the functional units of a computer.	(06 Marks)
	b.	With an example explain basic instruction types.	(06 Marks)
		With an example explain branching.	(08 Marks)

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OR With an example explain the, different addressing modes (12 Marks) Write a brief note on the following: Assembler directive i) ii) Basic input / output operations. (08 Marks) Module What is an interrupt? Briefly explain. (05 Marks) Write a brief note on the following: i) Exceptions ii) Direct memory access Bus arbitration. iii) (15 Marks) OR 8 Write a brief note on the following: Accessing I/O devices a. b. Interrupt Nesting c. Synchronous bus d. Asynchronous bus. (20 Marks)

Module-5

9 a. With a neat diagram, explain the internal organization of memory chips.

b. With a block diagram, explain CMOS memory cell.

c. With a neat diagram, explain dynamic RAM.

(07 Marks)

(07 Marks)

(06 Marks)

OR

Write a brief note on the following:

- a. Read only memory
- b. Speed, size and cost of memories
- c. Cache memories

d. Virtual memories. (20 Marks)

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